



Microbes Make Our World

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## October 2026 Virtual Journal Club: Sifting Through the Flora: Redefining Actionability in Respiratory Microbiology Q&A Transcript

**Sophonie Oyeniran:** *Great discussion. Thank you for noting the differences between endotracheal and tracheostomy. Should labs be collecting more information on cultures at collection, such as the indication to the point that various practices/patient populations have different interpretive criteria?*

**Prinzi:** There are differences in how patients with endotracheal tubes and patients with tracheostomies are managed clinically. Additionally, guidelines make different recommendations (although several of the same key tenets remain the same between the two groups). Given this, it would be ideal to parse out ETT vs tracheostomy samples whenever possible, but as Dr. Doern said during the discussion, this can be a bit cumbersome for the lab based on various factors like LIS setup, laboratory procedures, etc. Even if labs note differences in specimen type in the LIS, I think that the lab workup and reporting processes would likely be similar, if not entirely the same. Differences in management of these patients have a lot to do with the service that covers them (e.g., pulmonary medicine for patients with long-term tracheostomies vs. critical care for ETT), as well as guideline recommendations. Most of these recommendations are for the pediatric population. Some key things to note about these recommendations, as well as links to the resources, are below:

1. More so than ETT-based guidelines, tracheostomy guidelines emphasize that clinical management should be entirely symptom-based, and cultures should only be used in select cases where knowing microbiological information would legitimately guide therapy. “The panel suggests obtaining tracheostomy cultures only when there is concern for an acute lower respiratory tract infection, and not for surveillance or test of cure. These recommendations promote antibiotic stewardship and avoid unnecessary diagnostic testing that does not change management.”
  - a. ATS Recommendations
    - i. RECOMMENDATION 4A: In well children with tracheostomy tubes, we suggest against routine surveillance of tracheal aspirates for bacterial growth (conditional recommendation, low certainty of evidence).
    - ii. RECOMMENDATION 4B: In children with tracheostomy tubes and concerns for lower respiratory tract infection, we suggest culturing tracheal aspirate when needed to guide management (conditional recommendation, low certainty of evidence).
    - iii. RECOMMENDATION 4C: In children with tracheostomy tubes who were recently treated with antibiotics and are clinically improving, we suggest against test-of-cure tracheal aspirates (conditional recommendation, low certainty of evidence).  
<https://pmc.ncbi.nlm.nih.gov/articles/PMC12618984/#sec49>
    - iv. Another good resource: <https://www.ovid.com/jnls/co-pediatrics/fulltext/10.1097/mop.0000000000001559~pediatric-tracheostomy-associated-respiratory-infections-an>
2. Since there are not any established interpretive criteria that differ between ETT and Tracheostomy, it may be a lot of extra work for the lab to come up with different procedures for these. Since the clinician managing a patient with a tracheostomy will be considering things a bit differently (e.g., potentially more likely to know what the patient has been colonized with most recently, recent AST patterns), they might use the results of the culture to inform a different kind of management – but changing the reporting structure or process for trach vs ETT may not be very beneficial.



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- a. HOWEVER, understanding that these patients are managed differently and that the clinical teams may need different things from these results is very important for labs considering implementing diagnostic stewardship interventions! For example, in our study of organism overreporting from respiratory cultures (2022), 83% of the organisms reported from cultures that came from tracheostomies were reported in concordance with ASM guidelines/recommendations, vs. only 39% in the ETT group (signaling more pure cultures, cultures with predominant pathogens, or cultures with GS and organism growth that prompted workup in the tracheostomy group). When we zoomed in on excess therapy used in each group because of organism overreporting, there were 48 days of excess therapy in the tracheostomy group vs 472 in the ETT group.  
<https://pmc.ncbi.nlm.nih.gov/articles/PMC9667758/>. While processing and working these up differently may not be a feasible option for many labs, considering different nudge comments or behavioral interventions targeted toward the differences I highlight above could be useful.

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**David Kanzin:** Great presentation. Regarding the contamination, can you decontaminate the samples before inoculation for some select pathogens, like *Mycobacteria*?

**Prinzi:** I think that the major challenge here is that the *Mycobacteria* decontamination process takes advantage of the waxy outer layer on those organisms. It effectively gets rid of other organisms while keeping those intact. Many of the organisms we might want to identify in cases of HAP/VAP or severe CAP can be both colonizers and pathogens, and subjecting them to a process like that might make it very difficult to sort out what is actually causing the problem (because many of those organisms would be killed). A good example here would be *S. pneumoniae*. We know it is a major cause of pneumonia, and we also know that it readily colonizes the oropharyngeal space. It is already a tricky bug to grow or identify after it has been subjected to saline for too long, or in a tube being transported for too long (etc etc). It would be important to know if *S. pneumoniae* was present in clinically meaningful quantities, especially if seen with PMNs in a Gram stain, but a decontamination process would probably make that impossible.

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**Mervan Huseyin:** Does the method of specimen collection affect the respiratory flora, and how?

**Prinzi:** Short answer here is yes. There is literature to support that overly diluting ETT samples, using in-line suction and other methods impact the quality of the specimen collected. The BRIGHTStar collaborative has done some great work in this space, and their consensus publication includes recommendations for collection: <https://journals.lww.com/pccmjournal/fulltext/10.1097/pcc.0000000000003695~diagnostic-stewardship-of-endotracheal-aspirate-cultures-in>.

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**Mervan Huseyin:** If we have specimen by bronchoscopy, how can between microflora and other infectious agents?

**Prinzi:** Using established clinical thresholds (quantitative values), paired with organism type (e.g., known cause of pneumonia vs not) and pairing with other diagnostic results like Gram stain when appropriate.

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**Lisa Chattell:** *Is normal flora of kids less diverse? Does it take time to develop complex adult flora?*

**Prinzi:** My understanding of the literature is that under “normal circumstances” this is true. However, patients who are mechanically ventilated experience severe dysbiosis, and several of the relationships that seem to be true for children vs adults may wash out in this setting. There is also some really interesting literature in the pediatric space by Mourani et al. that demonstrated only subtle differences in the microbiota of children who were intubated and got VAP vs. those who did not develop VAP. It suggests that it’s a very complex process, and organism burden alone may not be the only thing driving VAP. I have linked some interesting microbiota-related papers below:

1. <https://pmc.ncbi.nlm.nih.gov/articles/PMC13260125/>
2. <https://pmc.ncbi.nlm.nih.gov/articles/PMC5922343/>
3. <https://pmc.ncbi.nlm.nih.gov/articles/PMC7979474/>